UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/886,459	06/20/2001	Kenneth J. Hines	10488/13:1	4978

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EXAMINER
TANG, KUO LIANG J

ART UNIT	PAPER NUMBER
2122	8

DATE MAILED: 12/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>20 June 2001</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

    4a) Of the above claim(s) <u>15-18</u> is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14 and 19-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
        application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application)
since a specific reference was included in the first sentence of the specification or in an Application Data Sheet.
37 CFR 1.78.

    a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific
reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4,5,7</u>.

4)☐ Interview Summary (PTO-413) Paper No(s). _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: .

DETAILED ACTION

Election/Restrictions

1.   Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I.   Claims 1-7, 8-14 and 19-25 drawn to create and use data structure

   processing, classified in class 717, subclass 132.

   II.   Claims 15-18, drawn to method for modifying an existing static control

   graph for the system, classified in class 717, subclass 156.

2.   The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as subcombinations disclosed as usable together in

a single combination. The subcombinations are distinct from each other if they are

shown to be separately usable. In the instant case, invention I has separate utility such as

implementing a software analysis tool for debugging a software system in a creating data

structure and static control graph. Invention II has separate utility such as for modifying

an existing static control graph. See MPEP § 806.05(d).

Because these inventions are distinct for the reasons given above and have

acquired a separate status in the art as shown by their different classification; and the

search required for Group I is not required for Group II; and have acquired a separate

status in the art because of their recognized divergent subject matter, restriction for

examination purposes as indicated is proper.

During a telephone conversation with Micah Stolowitz on 12/09/2003 a provisional election was made without traverse to prosecute the invention of elected Group I, Claims 1-7, 8-14 and 19-25. Affirmation of this election must be made by applicant in replying to this Office action. Group II, Claims 15-18 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Specification

3.   The disclosure is objected to because of the following informalities: page 89, line 12, "[80]'"is unclear and can not be found anywhere in the specification.

Appropriate correction is required.

Drawings

4.   The drawings are objected to because FIG. 44A-44D the brief description of drawing in the specification and drawing does not match. I.E. In the specification, the tail of FIG. 44A and FIG. 44B all asserts the value to true, but in the drawings, FIG. 44A and FIG 44B, item 4312 has a bubble; Same mismatch also apply to FIG. 44C and FIG. 44D. A proposed drawing correction or corrected drawings or corrected brief description of drawing are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5.   Claims 1-7 and 19-25 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As Per Claims 1-7 and 19-25, claims are non-statutory because they do not require computer implementation, could be done by hand. Not in the useful or technological arts and therefore not patent eligible subject matter. Additionally, appears to be an abstract idea lacking any real world practical application.

6.   To expedite a complete examination of the instant application the claims rejected under 35 U.S.C 101 (nonstatutory) above are further rejected as set forth below in application of applicant amending these claims to place them within the four statutory categories of invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7.   Claims 1-7, 19-25 are rejected under 35 U.S.C. 102(a) as being anticipated by Munch et al. US Patent No. 6,038,381 (hereinafter Munch).

8.   As Per Claim 1, Munch discloses a Method and system for determining a signal

that controls the application of operands to a circuit-implemented function for power

savings. (See Abstract & FIG 8, 9 and associated text). In that Munch discloses the

method of creating data structure that covering the steps of:

"a set of conjunctive nodes, in which each conjunctive node of the set of

conjunctive nodes represents a conjunctive boolean guard on state changes within the

software system;" (E.g., see col. 13:9-26 which states "...the conjunctive Boolean

expression, AND, is used because node 588 has only one fan-out. ..." (conjunctive

boolean guard);

"a set of disjunctive nodes, in which each disjunctive node of the set of

disjunctive nodes represents a boolean guard on a functional object within one of the

software elements;" (E.g., see col. 13:4-14 which states "... disjunctive Boolean

expression (e.g., OR) is used. ..." (disjunctive boolean guard)); and

"a set of directed edges, in which each directed edge of the set of directed edges

connects two nodes and represents implication between the nodes." (E.g., see col. 7:58-

67 & 8:1-5 which states "...interconnected with signal lines (e.g., 234, 252, 272). ..."

(directed edges)).

9.   As per Claim 2, the rejection of claim 1 is incorporated and further Munch

teaches

"each directed edge of the set of directed edges has an origin and a destination

and only responds to a false value at the origin." (E.g., see FIG 5, item 252, col 9:39-67

to 10:1-10).

10.   As per Claim 3, the rejection of claim 1 is incorporated and further Munch

teaches

"each directed edge of the set of directed edges has an origin ad a destination and

only asserts a false value at the origin." (E.g., see FIG 5, item 252 and col. 9:39-67 to

10:1-10).

11.   As per Claim 4, the rejection of claim 1 is incorporated and further Munch

teaches

"each directed edge of the set of directed has an origin and a destination and only

asserts a false value at the destination." (E.g., see FIG 6, item 350 & 352 and col. 9:39-67

to 10:1-10).

12.   As per Claim 5, the rejection of claim 1 is incorporated and further Munch

teaches

"each directed edge of the set of directed has an origin and a destination and only

asserts a true value at the destination." (E.g., see FIG 6, item 354 & 356 and col. 9:39-67

to 10:1-10).

13.   As per Claim 6, the rejection of claim 1 is incorporated and further Munch

teaches

"each directed edge of the set of directed edges has an origin, in which the edge

responds to a value selected from the group consisting of true and false, at the origin."

(E.g., see FIG 5, item 222 and col. 9:39-67 to 10:1-10).

14.   As per Claim 7, the rejection of claim 6 is incorporated and further Munch

teaches

"each directed edge of the set of directed edges has a destination, in which the

edge asserts a value selected form the group consisting of true and false, at the

destination." (E.g., see FIG 5, item 222 and col. 9:39-67 to 10:1-10).

15.   As Per Claim 19, this is a method version of the claimed data structure "product"

as discussed in Claim 1 above, wherein "... generates an output value ..." are also

addressed under "directed edge" of Claim 1. Thus, the rejection as set forth in Claim 1

also applied.

16.   As per Claims 20-25, recite such claimed limitations which also have been

addressed in Claims 2-7, respectively.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the
invention was made to a person having ordinary skill in the art to which said subject matter pertains.
Patentability shall not be negatived by the manner in which the invention was made.

17.   Claims 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Munch et al. US Patent No. 6,038,381 (hereinafter Munch) in view of VanHuben et al.

US Patent No. 6,134,676 (hereinafter VanHuben).

18.   As Per Claim 8, Munch discloses the method that covering the steps of:

"a set of conjunctive nodes, in which each conjunctive node of the set of

conjunctive nodes represents a conjunctive boolean guard on state changes within the

software system;" (E.g., see col. 13:9-26 which states "...the conjunctive Boolean

expression, AND, is used because node 588 has only one fan-out. ..." (conjunctive

boolean guard);

"a set of disjunctive nodes, in which each disjunctive node of the set of

disjunctive nodes represents a boolean guard on a functional object within one of the

software elements;" (E.g., see col. 13:4-14 which states "... disjunctive Boolean

expression (e.g., OR) is used. ..." (disjunctive boolean guard)); and

"a set of directed edges, in which each directed edge of the set of directed edges

connects two nodes and represents implication between the nodes." (E.g., see col. 7:58-

67 & 8:1-5 which states "...interconnected with signal lines (e.g., 234, 252, 272). ..."

(directed edges)).

Munch doesn't explicitly disclose Boolean logic debugging system. However,

VanHuben teaches "A software analysis tool for debugging a software system, the

software system having software elements which expose control interactions between the

software elements." (E.g., see col. 1:11-60, "...the ability to debug, analyze, and verify

...correlating hardware and software events. ... performing boolean compares...").

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made incorporate the teaching of VanHuben with the method of Munch, to

debug software by performing Boolean comparision. The modification would have been

obvious because one of ordinary skill in the art would have been motivated so that a

computer system can use analysis tool with Boolean logic to debug the software.

19.   As Per Claim 9, the rejection of claim 8 is incorporated and further Munch
teaches

"each directed edge of the set of directed edges has an origin and a destination

and only responds to a true value at the origin." (E.g., see FIG 5, item 240a, col 9:39-67

to 10:1-10).

20.   As Per Claim 10, the rejection of claim 8 is incorporated and is rejected under the

same reason set forth in connection of the rejection of claim 2.

21.   As Per Claim 11, the rejection of claim 8 is incorporated and is rejected under the

same reason set forth in connection of the rejection of claim 4.

22.   As Per Claim 12, the rejection of claim 8 is incorporated and is rejected under the

same reason set forth in connection of the rejection of claim 5.

23.   As Per Claim 13, the rejection of claim 8 is incorporated and is rejected under the

same reason set forth in connection of the rejection of claim 6.

24.   As Per Claim 14, the rejection of claim 13 is incorporated and is rejected under

the same reason set forth in connection of the rejection of claim 7.

Conclusion

25.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Kuo-Liang J Tang whose telephone number is 703-305-

4866. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Tuan Q Dam can be reached on 703-305-4552.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9306.

Kuo-Liang J. Tang

Software Engineer Patent Examiner

TUAN DAM
SUPERVISORY PATENT EXAMINER